IN THE SPECIFICATION:

Please amend paragraph **[0066]** as follows:

[0066] For each breathing cycle, the partial pressure of end-tidal ~~CO_2~~ CO_2, carbon dioxide elimination (VCO_2), the fraction of inspired, or "mixed inspired," ~~CO_2~~ CO_2, and the airway deadspace are calculated. End-tidal CO_2 is measured, as known in the art. Carbon dioxide elimination is typically calculated as the integral of the respiratory flow over a breathing cycle (in milliliters) multiplied by the fraction of CO_2 over the entire breath. The fraction of inspired CO_2 is the integral of CO_2 fraction times the air flow during inspiration, divided by the volume (in milliliters) of inspired gas.

Please amend paragraph **[0074]** as follows:

[0074] The partial pressure of end-tidal CO_2, which is assumed to be substantially equal to a weighted average of the partial pressure of CO_2 in all of the perfused and unperfused alveoli of a patient, may be calculated as follows:

$$Pet_{CO_2} = (r)PA_{CO_2}) + (1 - r)P_{CO_2\ PDS},$$

where r is the perfusion ratio, which is calculated as the ratio of perfused alveolar ventilation to the total alveolar ventilation, or $(V_A - V_{PDS})/V_A$. The perfusion ratio may be assumed to be about 0.95 or estimated, as known in the art. Alternatively, the perfusion ratio may be determined by comparing arterial P_{CO_2}, which measurement may be obtained directly from arterial blood and assumed to be substantially the same as alveolar P_{CO_2}, to end tidal P_{CO_2} values by rearranging the previous equation as follows:

$$r = (Pet_{CO_2} - P_{CO_2\ PDS})/(PA_{CO_2} - P_{CO_2\ PDS}).$$

Please amend paragraph **[0080]** as follows:

[0080] Pulmonary capillary blood flow may then be calculated as follows:

$$Q_{pcbf} = \frac{[\text{before re-breathing } VCO_2 - \text{during re-breathing } VCO_2]}{[\text{during re-breathing } CA_{CO_2} - \text{before re-breathing } CA_{CO_2}]}.$$